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ABSTRACT

This paper considers the concept of networks as a strategy for educational change. It is divided into six parts: (1) the meaning of educational change; (2) models and strategies for educational change; (3) case histories (one formal and one informal international network and a network of rural schools in Norway); (4) dilemmas in networking, (e.g., verticality vs. horizontality, roles and relationshios, status quo or educational change, time and priorities); (5) networks as a strategy for educational change (research or dissemination, consensus or conflicts); and (6) the management of networks. (JD)

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NETWORKS FOR EDUCATIONAL CHANGE

by Per Dalin

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NETWORKS FOR EDUCATIONAL CHANGE

by Per Dalin

BACKGROUND

The purpose of this paper is to consider networks in education as a means to improve educational practice. Our society is controlled, and some believe, developed through networks. They range from established "closed" fraternities to loosely knitted groupings of students, from unions to professional clubs, from world-wide associations to local parent groups, and from single-issue pressure groups to academic-oriented discussion fora. In some sense the concept of networks is difficult as a focus for study because it is the very fabric of modern society.

There is serious crisis of confidence in education throughout the industrialized world. There are a number of reasons like unfulfilled promises to the public; the education sector has not been able to meet the unrealistic expectations in the 50's and the 60's. The "innovation movement" has not resolved the major issues of schooling. Research and development efforts have barely had a significant impact on the ordinary school. The economic situation is no longer "predictable" but highly unstable, and at the same time, enrollment is

declining. Maybe more seriously numerous attempts to improve schooling have illustrated the weakness of our knowledge base in education, how little we know about what is better and how difficult it is to create a process of educational renewal.

Networking might be a new fadism. There have been many over the past 20 years! Many ideas have been looked upon as panacea for the improvement of educational practice. There is, of course, no one easy way of renewing such a complex phenomena as the educational system. There are a number of roads towards improvement, they all have certain advantages and disadvantages. Our expectations should, therefore, be realistic about the possible contributions of networks for educational improvement. It is, and will be, one of several potential strategies for change that might be effective for certain purposes under certain conditions.

The Plan of the Paper

I find it difficult to discuss networks as strategies for educational change without clarifying the concepts of educational change itself and, indeed, analyze what we know at present about how changes are implemented in social systems. What do we mean by educational change? Are we talking about "deliberate attempts to improve practice" or are we talking about "natural" change in social systems stimulated by networks?(1)

My personal experiences with networks in Norway and international settings give me the opportunity to illustrate some aspects of this phenomena including some dilemmas in networks as strategies for educational change. Furthermore, I will attempt to generalize some of the learnings from networks with which I am acquainted. Hopefully, this will lead to some open questions for research and further development work.

THE MEANING OF EDUCATIONAL CHANGE

The terms "innovation", "educational change", "educational reform", "educational renewal" or "educational development" are often used in the literature for the same type of phenomena(2). The terms usually imply planned change not overlooking the fact, however, that unplanned change or "natural change" probably accounts for more changes in education than internally and systematically developed change efforts.

Many substantial "natural" changes have taken place in education since the Second World War. One example is the feminization of the teaching personnel and increase in the proportion of girls entering secondary or professional schools. Another example is the increasing student awareness of their potential power in educational organizations. These and other changes are linked to the transformation of society in terms of aspirations, norms, values and expectations. They set the stage for the future by strongly influencing the present(3).

"Natural change" or rather changes that are not systematically planned by educators have had major implications for the educational system. The political climate in Europe after 1945, for example, had a rather determinant effect on the direction of educational change in countries such as Western Germany and Scandinavia. Their aspirations clearly influenced by the War have had quite different effects in education in Germany and the Scandinavian countries. One can see these effects and their implications for the rather slow development of primary and secondary education in Germany after the War, compared with the Scandinavian countries(4).

It might be particularly interesting to understand the relation between natural and planned change in relation to networks. Young people are influenced by networks that are not only independent of traditional sectors but often are international through influences of mass cultures, music, literature, media, etc. Attitudes and behaviour are strongly linked to these sub-cultures sometimes "organized" as informal networks. Likewise, educators sometimes belong to networks beyond the education sector, in particular at the leadership level. The question is not, I believe, if the education sector is influenced by these networks but which sub-cultures and therefore what norms, values, ideologies, attitudes and behaviour are actually taking power in a constant interaction and battle among forces in our society.

Innovations for Whom?

During the rapid educational growth period of the 50's and 60's optimism was great about the possibility of improving the educational process dramatically through educational innovations. It was assumed that one could find better answers that would improve schooling for everybody. How realistic were these expectations? I have noted in an earlier report:

"We have included in our definition a specific qualification, i.e. that innovation is something better than what it replaces. 'Better' for whom? Is it possible to imagine innovations that are better for everybody, or that every individual or group will benefit from the innovation process? If someone does not benefit, is conflict then inevitable? Innovation, as we have defined it, may well mean improvement for some (e.g. students), but may not alter conditions for others (e.g. other students or teachers); and it may even worsen conditions for others again (e.g. parents, state finance, or even other students). Discussions of innovation, therefore, should include not only a careful definition of what improvement has resulted but also who has gained."(5)

Robert Travers in a critical study of educational technology illustrates its impact on minority groups. He argues that the purpose of introducing educational technology for minority groups

was to educate these students along traditional lines because the traditional goals were not being achieved. Traditional schools had failed to produce the "uniform pattern of human behaviour in minority groups that would fit the majority's concept of civilized life"(6). He argues, therefore, that these innovations were introduced to maintain the status quo. They were not set up to meet the needs and problems of the minority groups, but were instruments to serve the established majority population. This, he argues, was not necessarily understood, but certainly built into the approach: "Implicit in these packaged educational materials are political goals that have been largely ignored by both producers and users alike."(7)

One cannot ignore the fact when analyzing the effects of educational change over the past two decades that the effects have indeed been political, that is they have effects on the control of individuals, their life chances, and on the distribution of resources. It is also true that outcomes in terms of implementation have been less than expected(8). One can, of course, argue that the small effects were due to inadequate models of change and therefore technical in nature. It is also, however, possible to interpret the lack of results under certain conditions and the clear success under other conditions as political, i.e. they served certain populations better than others, were accepted more easily for ideological or pragmatic reasons under other

conditions and "failed" under other political circumstances. In analyzing a number of case studies of educational change in several countries it is not possible to ignore the political dynamics of educational reform(9).

Innovation - By Whom?

The understanding of what is a problem is to a large extent dependent on personal judgment alined with the professional role. The question, therefore, of who decides is crucial. The "ownership" problem to an innovation is significant, not only because it might illuminate why and how the innovation was introduced in the first place but also because it might tell us something about the possibilities for successful implementation and dissemination in the system.

What is understood as the problem determines strategies for solving the problem. In other words if we apply this notion to change, the process defines what is an innovation. Problem identification does not necessarily come before problem solving, but it is at least an important part of that process. Moreover, problem identification is a very difficult process, the techniques barely developed, and the process often ignored. In most educational systems, however, it is taken for granted who has the right to define the problem. To a large extent this will determine the way the problem is solved, who is solving the problem and why. By definition, therefore, "problem-solving" is a political process(10).

Who Has To Change?

Major educational innovations assume changes in knowledge, skills and behaviour of a great number of individuals from students and parents to teachers and administrators. Several studies indicate how difficult it is to implement changes that include changes at the "user level"(11). In most cases "the user" is the teacher and the student. Most change models do not include the user in several critical "stages" of the change process. This is particularly true for problem identification and problem solving more generally. They are "involved" in implementing the innovations but often faced with a "fait a compli". No wonder one can observe "resistance to change" (see discussions of "barriers" below).

In this discussion of concepts related to educational change we have arrived at a classical dilemma in the change process, namely that those who supposedly should benefit from a given process of change, those who are involved in problem identification, problem solving and decision making, and those who need to change their behaviour are often individuals and groups with different roles, expectations and interests. They often live and work apart from each other, are members of different networks, and seldom "communicate". One important task of a "networking strategy" is to bridge the gap among these groups as illustrated in the figure below:

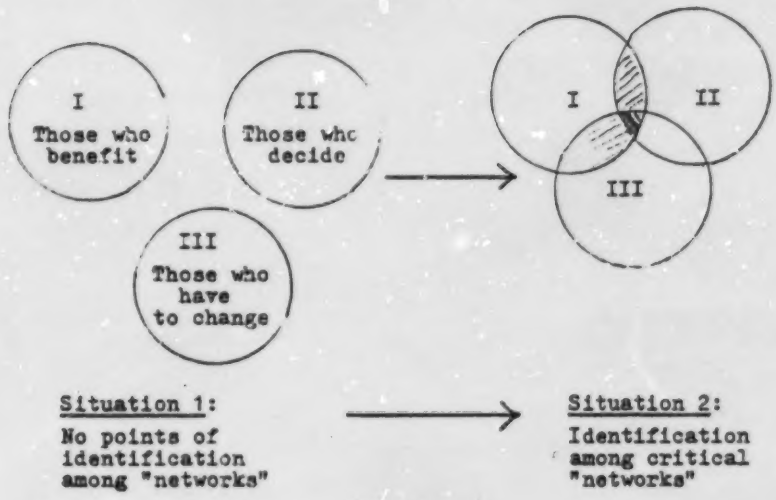

Figure 1: Networking as a Management Strategy

Innovation Characteristics

A number of attempts have been made to establish a "typology of educational innovation". It is important to identify major characteristics of various forms of educational innovations since the process by which change actually occurs will among other factors depend on these characteristics. I have earlier made distinctions between technological change, behaviour change, organizational change and social change, each having important characteristics that will determine the success of given change strategies. In the summary statement the following observation was made:

"i) Change is a "process" phenomenon. Change takes place over time. It can be evolutionary or revolutionary in nature and it involves a number of stages, involving individuals, institutions and subsystems. It is partly determined by forces outside the control of educators or institutions within the system. The success and failure of an innovation will, only to some extent, be dependent on systematic efforts within the system to manage the process of change. When this is said, however, the effects of the management process can be greatly improved by a thorough understanding of the complexities and dynamics of the change process itself.

ii) Change is a systemic phenomenon. Any change in a social system is like a chain reaction. Individuals, organizations and interest groups are linked through formal and informal connections which are influenced by external forces. The successes and failures of educational reforms are, to a large extent, dependent on the relationships and strengths of these factors over time, and the way the change process is managed to dope with the systemic and dynamic nature of the situation. The question of who decides for whom, at what cost, for the individuals and institutions involved will greatly determine the dynamics and the relationships over time.

iii) Change is a multi-dimensional phenomenon. Educational change can only be fully understood using different perspectives, including different discipline perspectives. A number of theories and hypotheses from disciplines such as economis, anthropology, sociology, psychology, administrative and organizational science, and pedagogy are important in understanding the many dimensions in the process of change. The process is "political", and it is "technical". It is "organizational" and it is "individual". Only a "process analysis" that takes the characteristics of the innovation and the setting into account can grasp the full meaning of the process"(12).

Barriers To Change

It follows from the discussion above that the concept "resistance to change", meaning unwanted and unhealthy reactions to educational reforms by individuals has limited value. Since we cannot assume that any "innovation" is necessarily better for everyone included and in some cases cannot be understood as an improvement due to the lack of ownership and involvement, "resistance" is a rather ambiguous term. The following types of barriers have grown out of IMTEC work over the past seven years(13):

1. Value barriers: these are barriers that exist because individuals and groups have different ideologies and values. Often value barriers can be traced back to the basic characteristics of the innovation itself. Other times the process of change creates ideological problems in particular among those who do not "own" neither the understanding of the problem nor the process of change. Finally, because the value implications are seldom made clear uncertainties about the consequences of given reforms creates "resistance" that I prefer to understand as a healthy defence mechanism.

2. Power barriers: these are barriers caused by power redistribution in the system often the result of significant innovations. Such barriers are easily observed in the development of comprehensive schools in Europe. Various sectors of education have established power groups that will be modified through integration of sectors. The same is often true in comprehensive curriculum reforms. Husén in one of his studies of educational reforms in Sweden says: "The elitist secondary school was an institution where the teachers were instrumental in designing the fate of the students. They were in their last run the gatekeepers of the establishment."(14) The creation of comprehensive schools was therefore a question of power redistribution in society.

4. Psychological barriers: sometimes individuals resist change in spite of the fact that the innovation does not severely contradict their values or upset their power. There may not even be major practical problems connected with the innovation. I am aware that this definition of "psychological barriers" is rather narrow. Often, resistance is related to what I have called value barriers and sometimes power barriers. The distinction is made because in the introduction of educational innovation all these types of barriers will exist in combination and one cannot deal with all of them as unwanted and/or unhealthy.

It is possible to see networks both as a facilitating force and a conservative force in a specific change situation. Increased communication among individuals within and across interest groups might well reinforce certain barriers to change, but could also alternatively facilitate deeper understanding, commitments and acceptance of new ideas. I have made the assumption that networks might be more useful for certain purposes than others. It might also be that networks can play quite different roles in different types of innovations. At this stage, however, it is important to note that networks in and by themselves are not necessarily useful vehicles for change. What are the critical processes in "networking" as a facilitating force in educational change?

MODELS AND STRATEGIES FOR EDUCATIONAL CHANGE

The NIE paper "Networks for Mutual Assistance and Collaborative Development" begins with the following sentence: "In response to more than a decade's frustration with attempts to improve American schools through federal investments of over more than a billion dollars in research and development and billions more in categorical aid, the ebullient commitment of the sixties has given way successively to conflict, doubt and in some quarters to a bitter resignation."(15)

Much of the introduction of the NIE paper is devoted to a review of the R & D model in education. There is no doubt that America, more rigorously than any other country, has invested in research and development in education. Although there are good reasons for being critical to the work done, I am not at all sure that we have sufficient data from change process research to write off any of the attempts of educational change so far attempted. Our knowledge about how changes come about in social systems is fairly limited. We simply do not have a comprehensive theory of educational change.

The purpose of this section is to analyze the underlying assumptions and theoretical base of the various "models" of educational change, including the R & D model and problem-solving models. On the basis of this discussion I will attempt to focus the attention on networks as a deliberate strategy to improve educational practice.

Consensus or Conflicts in Educational Change?

There is another contrast between America and most Western European countries in their approaches to educational change. I will argue that most American models of educational change (e.g. R-D & D, social interaction, problem solving and linkage) are consensus-oriented or "a-political" while most European "models" are conflict-oriented.

Strategies for educational change - and networks in my view might be considered a strategy for change - need to be understood in an ideological perspective. By this I mean that we need to understand the underlying assumptions behind a strategy in order to assess its possible contributions and limitations. What are the philosophical orientations that could be the basis for networks as a strategy for change?

Evolutionary and neo-evolutionary theories of change have their roots in theoretical sociology and are partly influenced by the work of Darwin in biology(16). Work by Lickert, Maslow and MacGregor, and Argyris and Schön belong to these schools of thought(17). Neo-evolutionary theories are characterized by assumptions of stage-by-stage developments and progress in society. Education is seen as playing a major role in the "modernization" of society and the task of educational reform is mainly to "upgrade" the quality of the learning process to correspond with new stages of developments in society(18).

Other social change theories like systems theory in my view are basically sub-theories belonging to an advanced neo-evolutionary tradition. Systems theories are highly rationale, stressing stages, sequences, feedback, division of labour, etc. in the process of change. The R-D & D model is not necessarily a systems model but it has many similarities to it.

Neo-evolutionary theorists seldom question the goals themselves. The school, to a large extent, has been seen as an important building block in a continuous growth pattern. The very nature of development itself has seldom been questioned. Who in fact did benefit from "modernization"?

Schools, in my view, have played an important role in the modernization of our societies, but they have also been used by the elite as selection mechanisms and support for the dominant forces in society. Also, much of what has been described as "innovations" in schools can best be characterized as minor adjustments, attempts to bring educational practice into "more effective" relations with developments in society.

Several sub-theories in the neo-evolutionary tradition such as contingency theories(19), human capital theory(20) and structural functional theories(21) by definition assume that educational innovations are attempts to redefine educational practice as responses to "demands" or "needs" in society at large.

The R-D & D model has shown severe limitations. John Goodlad says: "The R-D & D model appears not to be in its functioning a strategy for change. It is simply what the letters stand for: research, development and diffusion with what comes out to be diffused being more or less adrift requiring some other force to pull it into close juxtaposition with persons who might have

some use for it. A productive change strategy requires the inclusion of this latter element."(22)

My main doubt about the R-D & D model, however, has to do with the way knowledge is defined. One assumes that there exists a knowledge base somewhere that will in and by itself improve practice. The strategy question becomes one of "knowledge utilization". There are several problems with this assumption: Who are the users of the knowledge? To what extent do they share the values built into the products? To what extent are the values clear? Do the products serve everybody equally well? What are the ultimate effects and significance of applying this knowledge? More specifically, what aspects of "development" are being served or neglected by the approach? Does the approach deal with internal efficiency questions or with broader issues of development?

According to some traditions, therefore, knowledge is an "inert" substance, universally valid and unchanging. New knowledge will therefore necessarily replace old knowledge and practice will be improved. Accordingly, "knowledge utilization" can be considered a technical issue. Another definition of knowledge refers more concretely to the things that are done with it. In this view knowledge becomes knowledge only in use. Utilization of knowledge can, therefore, only be measured in terms of the consequences of its application. Knowledge is not neutral but has value dimensions. Knowledge is political.

In my view most of the R-D & D work has ignored this last definition of knowledge. Most R & D centres, for example, have not been considered political in the real sense of the word. They have taken on a "professional image" assuming a neutral stand on value questions. They have in many ways ignored the realities of knowledge and the realities of schools.

One last observation about the R-D & D model: It does work under certain conditions. There are examples of successful R-D & D programmes. We do not know enough about conditions for success. What are they?

The problem-solving model as described by Havelock rests on the assumption that innovation is part of a problem-solving process which goes on inside the user(23). It begins with a need which is translated into a problem and a statement of diagnosis. It assumes that the client is able to conduct a search and retrieval of ideas and information which can be used to formulate a given innovation. Finally, the user will adapt the innovation to his setting, try it out and evaluate it to see if it fulfills the expected goals.

The Rand Corporation's Change Agent Study indicates that practitioners seldom search outside their district for new ideas, even when new practices were sought in respect to a felt need(24).

Several studies raise questions about the frequency of local problem solving in itself. They suggest that pressure for change is typically initiated outside the school rather than by assessment of local educational needs(25).

We probably do not know enough about the reality of problem solving in our schools today, or about effective strategies to improve that process. Organizational development techniques have certainly had substantial impact in several settings but not as yet on a wider scale. Brooklyn Derr has critiqued organizational development as a change strategy in schools on several grounds. He feels that OD is difficult to apply for several reasons:

1. a lack of common indicators of performance;
2. the nature of the school environment;
3. high autonomy needs of people who work in schools;
4. relatively low degrees of required interdependence; and
5. a civil servant mentality in schools(26).

Matthew Miles in a critique of Derr's position observes the following:

"From my point of view, there are problems with this analysis, perhaps most centrally with the notion that 'OD' somehow demands

a collaborative stance. OD from my standpoint simply involves the sustained, reflexive use of behavioural-science-based interventions to improve a system's functioning. That functioning may turn out to be primarily competitive, negotiative, low-interdependent, or closely collaborative; the issue is whether the system's inhabitants are being productive, happy, and growing/learning in the process. Thus the challenge with a low-interdependent system is to find ways of supporting its development, and an effective balance between integration and differentiation - not ways to somehow get it to be a 'collaborative' since 'OD' requires that."(27)

I agree with Matthew Miles that one does not need to assume a collaborative stand. In fact organizational development might well operate under conflict conditions. What is not clear, however, in the whole concept of "problem solving" is who has the problem and who has the right to define it? What happens if the problem cannot be solved? Whose needs and interests will be served?

The social interaction model is not really a model of educational change but a description of the pattern by which certain innovative ideas are diffused in a system. The work of Hagerstrand and others has been fundamental to this model(28).

There are also several problems with this "model" when explaining the process of educational change. First, it seems to concentrate on the process of adoption rather than implementation. Most studies conclude that the Superintendent or the Building Principal has adopted a given idea and he or she was influenced by a network of colleagues. The studies seldom question the value of the idea, where the idea comes from (except that it is supported by influencial peers), nor do they raise questions about the consequences of implementing the idea in practice.

Most studies with which I am acquainted that build on the social interaction model have studied the role of educational leaders, "innovators" or "change agents" in the process of adoption. House, for example, indicates that personal networks in education are essential for the diffusion of innovations(29). The Rand Corporation s Change Agent Study, however, is somewhat critical to the general idea of social interaction outside the school district. It was considered generally important within the district. On the other hand, educators seldom took the "trial" stage assumed by the social interaction model. There are simply insufficient resources to do so. The Rand Study found that local practitioners did not generally experiment and that the evaluation or "evidence" supposed by the social interaction model played only a marginal role in local decisions to adopt

or continue an innovation undertaken with federal "seed" money. Information in and of itself does not create the demand for change (30).

I would also like to put the social interaction model in a political frame. I assume that personal networks are built around trust and respect among individuals. Most often, I would think, these qualities are related to some common elements of values, ideologies or interests. It might be linked with certain roles (e.g. decision makers or researchers) who already share certain interests and values in education. If influential members of such groups adopt a new idea, it is not unlikely that others will follow. More important than observing that innovations spread along the railroad system or the highway system, therefore, is to observe to what extent they spread along ideological or political lines.

Furthermore, most of the studies in social interaction deal with the role of decision makers, innovators or change agents. I assume that networks also play an important role among practitioners, students and parents. What are the roles of networks at these levels of the system? Since these are the persons who greatly influence implementation I would assume that communication in networks among individuals at this level either facilitate or hinder educational change to take place.

The linkage model is a certain combination of the three models with most of the same assumptions as those presented above. For all these models my main concern is their consensus-orientation, or lack of political perspectives. The process of change is looked upon as a complex technical question including the use of resources, techniques of planning, evaluation, dissemination, etc., and "process" is mainly defined as a psychological issue. Fundamental concerns about goals, values and benefits are seldom addressed.

Conflict theories of change to a large extent have their ideological base in Marxist and neo-Marxist theories. A large body of knowledge analyzing socio-economic conflicts have their roots in this tradition. In Western Europe in particular studies of educational reforms are based increasingly on a neo-Marxist orientation(31). These orientations also see education as dependent upon the economy and dominant institutions. It differs sharply, however, from the neo-evolutionary view in the analysis of this relationship. In an earlier report I have noted:

"The relationship is not seen as harmonious or functional, self-regulating, and positive. On the contrary it is seen as a one-way domination serving the dominant elite forces in society. Lack of success in achieving 'equality of educational opportunity' for example is not explained in terms of technical, didactical,

or organizational factors, but rather in terms of basic conflicts in society. The dominant class will not easily give away privileges to the have-not's. The system according to this school of thought is in fact structured to reinforce the social class structure. The students are systematically trained to accept competition (which is always unfair; a fact which is often neglected or rejected), and taught to accept failures and rewards regulated by the dominant class.

According to this perspective educational change can only be brought about through social revolution since it will depend on basic changes in the economy and social structure.

Conflict theories have had only minimal impact on educational change strategies in the Western world. In fact this is also partly true for Eastern Europe and the Soviet Union where functional and systems-theories have dominated. Why is this so? First, educational change has seldom been understood as social change. Even in Scandinavia where the educational-social change relation has been explicitly expressed, modifications of systems theory have been used. Second, this theory has diagnostic power, but is seldom useful in the practical day-to-day management of education. Third, educators, probably due to the nature of their profession, are consensus-builders, that is they are searching for acceptable solutions in an organizational setting. The practical utility of neo-Marxist theories is seen as somewhat remote."(32)

Paulston(33) sees cultural revivalization as another conflict strategy. By "cultural revivalization" he means alternative grassroot culture movements. Horton understands mass "underdog" movements as potential radical strategies for educational change:

"We should have learned by now that fundamental restructuring will not occur in response to outcries against inadequacies of the present system or according to elite blueprints for change. Advocacy alone ... has never brought about radical change. We have learned from the folk schools in this country and abroad, from Paulo Freire and others like him, and from the great popular movements of this century, that people become motivated when they are personally involved in processes relating directly to them and their own life situations ... Thus, the only way to effect radical changes in the educational system is for educators to make alliances ... with community people, students, various ethnic groups, union members ... Goals, curriculum, and policy ... will be changed to the degree that more and more people will begin to participate in decision making and become agents of fundamental change in the educational system and society at large."(34)

Also, Illich's deschooling movement(35) and radical alternative school movements may be embraced under conflict theories (so-called anarchistic or Utopian theories). Again, these movements begin as alternative "grassroot" cultures and do not build on existing decision-making structures.

Do we have a theory of social change? At this stage there is no comprehensive theory of social change or of educational change. All theories, from evolutionary to utopian, are useful in explaining certain aspects of the process of change under given conditions. It is interesting to note that none of the theories are general theories of social change but take as their starting point a desire to change certain aspects of the culture. Evolutionary theories take it for granted that the present trend is "natural" and therefore good and the goal is to modify or "modernize" certain aspects of a system. Marxist theories have as a major goal a redistribution of power; in fact a change in the social order. When the starting point is a given type of change one would assume that the "theory" is really a strategy orientation to move the system in desired directions.

Therefore, there is no "natural" way by which changes occur in social systems. Studies that try to understand how changes take place can only illustrate how certain changes take place under given conditions in a given culture. In the development of a comprehensive theory of social and eduoational change, the following basic factors need to be taken into account (see figure 2)(36):

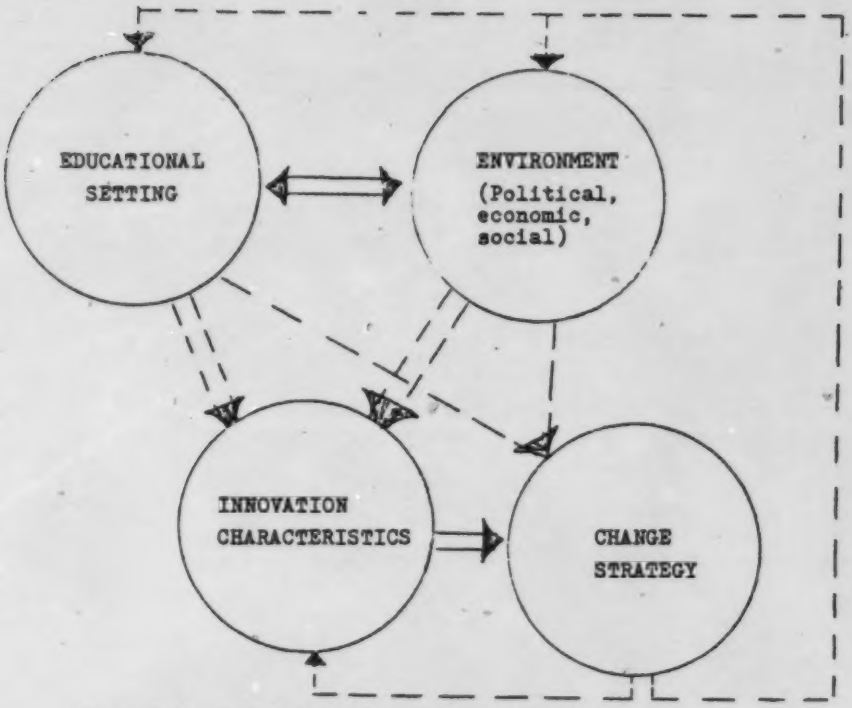

Figure 2: Basic Factors in Educational Change

(Source: Per Dalin, Limits to Change? Towards a Theory of Educational Change (in process))

1. Setting characteristics: The change process is a cultural process, influenced by a number of characteristics in the national and local setting, the educational system at large and the individual school as an organization. The outcomes and the process of change to a large extent will depend on the characteristics of the educational setting being the individual school or the local and central educational structure.

2. External environment: The educational system is highly dependent on the external environment. The relations are complex and dependencies are mutual. My assumption is that environmental conditions will influence the effects and the process of change. The better the fit between strong environmental forces and innovative goals, the more likely the innovative efforts will succeed.

3. Innovation characteristics: The goals of an innovation will often be established by the dominant forces in the educational setting and the environment. The characteristics of the change effort to a large extent will determine the relative success of different change strategies and models.

4. Change strategy: All social systems are characterized by a complex interplay of forces sometimes leading to change, other times they reinforce the status quo. In most educational systems traditions have influenced the way by which planned change is brought about. Over the years certain norms have been established that regulate the "change behaviour" of the system. These established "change norms" of the system are an important regulating mechanism in any change effort. A major change in these norms in the development and implementation of an innovation might be as important

for the effects and the process of change as the introduction of the innovation itself.

The change process is not a linear process but rather a "cyclic" phenomenon. The effects of a given change strategy over time will influence the educational setting, the environment and the characteristics of the innovation. The change process is a systemic process.

Networks for What?

What are the critical dimensions in assessing networks as a strategy for change? Let me at this stage present four networks supporting four different types of change efforts:

1. Deschooling networks: There is a strong movement in many countries in the industrialized world, as well as in developing countries, questioning the value of schooling or at least the function of schooling in today's society. We can see this movement as a grassroot counter culture in the industrialized world. In developing countries it might be looked upon as a critical movement towards western ideology and traditions. There already exists a number of deschooling networks nationally and internationally.

2. Cultural revitalization networks: Alternative school cultures are developed in several countries and have in fact

existed in Europe for several hundred years, originally starting with unusual creative pedagogues who started new school traditions around their own experiences (e.g. Monteasori schools or Rudolf Steiner schools). The more recent alternative school movements are quite numerous, have a number of orientations and therefore also support from different groups. It is probably correct to assume that most alternative schools today are started by students, parents and sometimes supported by teachers. They are influenced by individuals and groups with an independent and critical view of existing schools.

3. Innovation networks: Within the existing systems a number of alternatives also exist in the organization of schooling, curricula, evaluation and so on. The major curriculum development efforts in the 50's and 60's were actually supported by a large number of teachers and academicians in rather spontaneous developed networks. Today, networks of educators supporting innovations like "open education" are known in most countries and they also have their international fora.

4. Reform networks: Most countries have their national or state plans for educational reforms (e.g. the comprehensive school reforms in Europe). The Ministries of Education or the

state departments have the responsibility for these reforms. They are supported by several political groups and associations and developed by central decision makers. The same decision makers are usually connected across nations and states in rather informal networks, conferences, meetings, etc. There is no doubt in my mind that the flow of information among central decision makers has had a great impact on major trends in educational reform in the western hemisphere.

There are certain characteristics in common for all of these networks:

(a) They are all horizontal in nature; that is, most of the networks are composed of individuals with more or less the same level of responsibility, and with more or less the same role and interests in the innovation. There are exceptions: for example, the networks of the curriculum movements usually included both practitioners and academicians.

(b) Most of these networks are not permanent. They are established under certain conditions to fulfill membership needs and disappear after the completion of the change effort or through its failure. There are also

exceptions to this: for example, the "reform networks" are more stable and permanent networks of decision makers that do not necessarily follow one given innovation but rather develops into an informal mechanism of communication among people in top-level positions.

(c) The networks are not associations in the sense of providing members with a continuous service or basis for funding. The support in the networks is either political or psychological. Political in the sense that members may be reinforced in their arguments vis-à-vis their local groups by being aware of similar activities outside the local setting (and this is usually strengthened considerably if it occurs in another country!) Psychological because the strain of being an isolated innovator, and the "community feeling" of being associated with people who have the same mission, is considerable. The degree to which members are concerned about new information, knowledge production, skill development or some technical questions related to the innovation, will differ widely. Under certain conditions the innovation in and of itself is not very difficult to implement in technical terms. That does not mean, however, that it is not difficult! It might be difficult in political or psychological terms. Networks then are a strategy

to establish a power base. In those cases where knowledge and skills for putting the innovation into practice are at stake the mutual learning aspects become more central.

(d) These networks are built up to support widely different innovations and, in fact, different philosophies or ideologies about education or even perhaps about society. They are therefore all political in nature.

At this stage we might conclude that networks in education might serve any change effort and that in fact they could potentially be a strategy within any social change or educational change theory. They are not necessarily consensus-oriented or conflict-oriented. What is important, however, is that any network strategy will have political effects. Therefore, they cannot be dealt with only as a technical issue.

Types of Networks

It is difficult to draw rigid distinctions, particularly between "formal", "informal" and "non-formal" networks. I don't think these distinctions are very clear, nor that they are very important. Experience tells me that many informal or non-formal networks over time are established as more formal networks or organizations often facilitated by a central core group.

In my view some other distinctions might be useful to consider:

1. Single purpose versus multiple purpose networks: I have been involved in and observed several networks that, on an informal basis, seek to establish personal contacts to disseminate information about one single idea being a concrete innovation, a process technique or a mission. Such networks seem to establish themselves rather rapidly and phase out rather quickly as well. It might be that the political and economic support for a given idea is limited to a certain time and place. People and ideas move quickly. On the other hand, multiple purpose networks often have a broader mission based on common values or goals and the activities themselves shift over time. They might also be developed spontaneously but they have a tendency to be transformed into more "formal organizations" or more stable networks, be more dependent on central financing, core group, etc. One criteria to look for in analyzing the possible future of an informal network, therefore, is the degree to which it is a single or multi-purpose network.

2. Content versus process networks: In the NIE staff paper(37) many examples are given of networks built around the development or dissemination of a given innovation. Such networks are content-oriented. They are often relatively easy to form

and from my experience in education I believe they attract teachers who are often subject-content oriented.

Networks are more seldome built around a process-orientation. First, there are not many people who are interested or qualified in process skills compared with content-oriented personnel. Furthermore, I assume that they do not form vested interest groups to the same extent as most content-oriented groups. Their mission is also somewhat less focused and some of the knowledge is not easily transferable (i.e. confidentiality vis-à-vis clients, etc.).

The NIE staff is interested in the questions about "the contributions and limitations of networks in local educational problem solving". It is not clear if this implies content-oriented or process-oriented networks. In the latter case I assume that federal incentives might prove useful, simply because process-networks are quite seldom and vulnerable.

3. Single level - multiple level networks: Most spontaneous networks are networks among colleagues (i.e. research networks, teacher networks, etc.) The mission is rather clear and members can identify with each other with some ease. It is probably difficult, however, to make any clear distinctions between spontaneously formed, informal or non-formal networks

among colleagues on the one hand and more stable professional organizations (usually identified as "formal networks") on the other. Quite interesting, however, is the fact that in many countries spontaneous personal networks are spin-offs from "formal" networks.

Much more seldom are multiple level networks that involve people in different roles and positions throughout the system. I look upon the process of change as a systemic process. Interaction among individuals with different roles is essential. Multiple level networks are therefore important. Such networks, however, tend to be increasingly "organized" and therefore more formal.

CASE HISTORIES

There is a temptation when writing about "networks" to begin to redefine life experiences! Except for the last five to six years, when I deliberately tried to establish networks nationally and internationally, I have never thought about my experiences as "networking experiences". The rather broad definitions in the NIE paper, however, make me believe that several smaller or larger projects with which I have been associated have in some sense developed either directly or indirectly through informal or non-formal networks.

How does one describe a network? Or, more precisely, what aspects of a network are important to describe? A case study is no more

than the perceptions of the writer of a given situation. Since at this stage we do not have a theory of networks, nor a theory of educational change, a short case study can do nothing more than illustrate a few dimensions in networks that the author feels are important.

First, why am I interested in networks? The first networks in which I was involved were informal organizations set up to fulfil certain purposes in which I believed. After having invested a number of professional years in educational development I have become increasingly aware of the potential in networks as a strategy for educational change. My interest over the last years, therefore, has been more concentrated on the potential contribution of networks to educational reform. I have become mainly process-oriented to networks.

CASE 1: The Youth Refugee Action

Following the Second World War, Europe was faced with large problems of development, lack of resources and was in need of nearly everything that we can define as needs in a modern society. Simultaneously, a new generation of young people grew up with the shadows of a desperate war in the back of their minds; they were familiar with the brutality of war and many had a hatred towards Germany that was not only outspoken but also accepted by most people. The German youth, however, was in despair, many were in prison and a great number had little hope for the future.

During the late 40's a small group of Norwegian youngsters began a programme of reconciliation between Norwegian and German youth. There was no money and no support from the community. At that time there were transportation and communication problems (it was almost impossible to obtain a passport) and attitudes towards the Germans were totally negative. Only a few young people shared the same mission i.e. that Europe could not be built without an understanding between Germany and those countries affected by the war. The first load of refugee children from Germany was taken to North Norway, the region that was totally bombed or burnt out during the strong winter of 1944. Madness? Most probably, but the plan worked despite heavy resistance, sabotage and agressive attacks. Over the years a large network of individuals was built to support the activity. Sixteen thousand children from West Berlin alone were taken to Norway and more than 40,000 linkages were built between German and Norwegian homes. Furthermore, direct linkages were later built between Norway and the homes of tens of thousands of refugee children in more than 15 countries in Asia and Africa. A worldwide network of personal contacts have now been established.

This network has always been and still is a spontaneous one. There is no membership fee. The networks consists of people who wish to devote their time, energy and resources to the work involved. For more than 25 years there have been tendencies

to create ways to formalize the organization, but they have always been rejected. However, this does not imply that the refugee activity does not have a core group; it has been heavily dependent on one person - a Reverend who was the founder of the activity and who is still the coordinator today. He has built up trust among the many supporters and this, I beleive, has been the important factor in this success story. It takes a full life commitment to establish personal networks that do not build on careers, hierarchy and money.

There are also other factors. The refugee activity had, and still has, a very clear mission. Value consensus among members was crucial for the success of the activity. Certainly there are other incentives in networks but I believe the most successful has clear values that go beyond pragmatic career patterns or interest groups.

Informal networks of this kind are often a threat to established organizations. In contrast to rather expensive and formal organizations in the same field, the refugee network has been able to prove its value through a very impressive record that has sometimes been the focus of public attention. It is interesting to note that the tendency to be "co-opted" into more formal organizations has never been a real choice. Certain attempts have been rejected by the network itself.

There is one important difference between this network and what we are usually concerned about in education. The work of the network members is not related to their daily lives in any significant way. Although the activities certainly have consequences for attitudes and behaviour they do not directly support activities "at the home base".

CASE 2: Network of Rural Schools

The Norwegian population is only four million and approximately 25% live within greater metropolitan Oslo. The distance from the south to the north of Norway is approximately 2,500 kilometres (or the same as the distance from south Norway to North Africa!) Except for a few cities the country is sparsely populated. Until the development of the nine-year comprehensive schools (1960) the country had one law for rural schools and one for city schools. Children in rural areas in many cases attended school only every second day. The schools were extremely small, communication among schools in rural areas was not very good and the quality of instruction was considered inadequate, at least compared with the situation in many city districts.

Following the development of the nine-year comprehensive school Norway introduced a common law of education for the whole country. (The first schools started in the mid-50's and the reform was fully implemented about 1970.) The reform included the prolongation of compulsory schooling from seven to nine years, full-time

schooling, the development of a comprehensive curricula, the strengthening of specialized services in all school districts (e.g. teacher centres, counselling, psychology service, etc.) and the development of learning material (including a series of individualized material). In other words Norway went through two decades of active development work, as did most other countries in the industrialized world.

The work was supported by the National Council for Innovation in Education (NCIE), a central agency with authority on behalf of the Minister of Education to plan and develop the reform. The work was mainly developed according to the R-D & D model but with less emphasis on research, less structured development and more of central/political planning than what is normally the case in America(38).

One of the first strategies to modify the R-D & D model was to invite local school authorities to be "pioneer districts" to test out the reform ideas in ordinary schools with ordinary teachers. The NCIE developed a number of curriculum projects, together with some five pioneer school districts that to some extent were quite successful in the pioneer stage. The NCIE gave these districts considerable support, partly in terms of cash contributions but mostly in terms of release time to teachers, inservice training, production of material, etc. The further development of these programmes continued in a second phase where a large number of school districts were invited - still with some economic and other support but modified somewhat from the original conditions.

Finally, the NCIE invited the whole country to participate. It was quite clear after a few years that this development pattern seemed to favour the pioneers. As one Norwegian researcher observed: "The pioneers have everything to gain and nothing to loose while the followers have everything to loose and nothing to gain."(39) How could one possibly break this discouraging downward spiral from the pioneer to the "follower" situation? This was particularly crucial for small schools in rural districts. They were seldom involved in pioneer activities (at least at the curriculum level). Several rural educators also felt that many of the projects designed from the central agency were not designed for them but for large schools in larger communities where the necessary support services were at hand. How could the rural schools be served in the crucial period of development so that the much felt discrepancy between city and rural schools at least did not widen during the period of development? The idea that a network of rural school idstricts could reinforce the development work in these districts was created. As far as I am aware this was a rather spontaneous development, starting with small seminars and conferences among rural educators and quickly supported by the NCIE who saw this as an opportunity to stimulate the development of the nine-year comprehensive schools in the rural districts. These districts had started the development quite early but the task of developing the curricula in the smaller schools had not been sufficiently stimulated.

The rural network was an informal group of concerned educators from small schools and school districts throughout Norway who felt a particular mission to strengthen rural education. They were supported politically by the communities since the threat of centralization was a major concern to the smaller districts. It was felt that great schools were better schools which provided more options and quality for the students. The only way of keeping the local schools was to prove their quality. Since resources were limited, one important strategy was "to stay together". Over the years many small but significant projects developed throughout the "network", new techniques were developed for timetabling of small schools, cooperation in curricula development was introduced, and summer seminars for teachers and increasing support of material became important building stones.

During the latter half of the 1960's and the beginning of the 1970's evidence to the support of small rural schools began to come in. National evaluations showed that many of the best rural schools were among the top schools in the nation in terms of educational achievement. This provided arguments for the small local communities who began to demand a new policy for rural schools. The tendency towards centralization decreased and was in fact reversed. Did a lower limit exist to the size of a quality school? Certainly it could be much smaller than was earlier anticipated. Over the last years, small schools have been recreated in Norway. There is emphasis on "local curricula", "small is

beautiful", and population movements back to smaller communities. More significantly, earlier "cost-benefit calculations" were considered more than superficial. They were far too limited in calculating the real costs of centralization - some believe purposely naive to serve the forces in favour of centralization.

The rural "network" movements in education and in other sectors as well are grassroot movements; in fact cultural revitalization networks with broad support in the communities. These movements are not sufficiently represented in the decision-making structure, usually a centralized force in the major cities with people from the smaller rural areas being misrepresented. Rather narrow cost-benefit analyses not calculating social costs have dominated the structural-functional models (neo-evolutionary theories) of educational change (this was particularly true in the 50's and 60's).

In contrast to the refugee case the rural "networks" did not have one central leader but were supported by a number of community leaders and educational leaders throughout the country who joined in the "movement" to fight for vital interests and values. During the first years these "counter cultures" were less known. They were not supported by the central machinery or by strong political forces but grew in importance and matured in Norway in such strong movements as, for example, the "Anti-Common Market" movement which, to most people's surprise "won" the National Referendum about whether or not Norway should join the European Community. There is no

doubt that due to the energetic work of thousands of individuals in the countryside, Norway did in fact decide to remain outside the European Community in contradiction to the official view of the Government and most central decision makers.

In this case, therefore, we see a network strongly supported by grassroot cultural movements. The education network was one very important network, particularly in the early stages, since the matter of loosing the community school is a very vital concern for small communities. Rural educators in many ways have played a leadership role in the "rural counter culture" in Norway.

Although these values are still very strong in Norway, the "networks" are not. Many of the rural networks have disappeared simply because the mission has been achieved. Interestingly enough, one of the networks that had the support of a strong central staff (i.e. the "Anti-Common Market Movement") has also disappeared as a movement and what is left of the core staff is a very small "information service". The education "network" was a multiple level network including decision makers, teachers and researchers, never organized as a "network". It combined both a content and a process orientation although the content-orientation dominated. One other interesting aspect which is different from the refugee network is that face-to-face contact was important. Rural educators had little chance to meet colleagues in their daily work. Summer workshops were therefore important. In the

refugee network the trust built up over many years by the core staff was sufficient to keep many thousand members involved and only a very small percentage of the "members" have ever met. Under what conditions are face-to-face contacts important for network success?

CASE 3: International Networks for Educational Change

The third and last case which I would like to describe briefly is a network that goes beyond national boundaries and one in which I have invested much of my time over the past four to five years, namely the project "International Management Training for Educational Change" (IMTEC)(40).

IMTEC was created under the auspices of the OECD (Organization for Economic Cooperation and Development), an international, intergovernmental organization in Paris. The OECD has established a Centre for Educational Research and Innovation (CERI) which is located in Paris.

During the active innovation period of the 60's in the western world a large number of educators were recruited for full-time innovative tasks. National "innovation centres" were created as well as R & D centres, laboratories, teacher centres and other support agencies. Thousands of educators interested in educational change had an opportunity for full-time work in educational change activities.

Increasingly, communication started to flow across national boundaries. A number of seminars, conferences, etc. were organized by international agencies, mostly policy oriented looking at "trends" in various fields (e.g. "Curriculum for the 80's", the "Future of Comprehensive Schools", etc.). Such international conferences were important for many reasons; personal contacts with colleagues in other systems were created that could be followed up later. They were also a testing ground for new ideas; information about sucesses and failures of similar innovations could be more easily obtained, and, most important, local projects could get international attention and support that was sometimes more than needed. And, finally (this is particularly true for the late 60's and the beginning of the 70's) many innovators felt isolated and frustrated due to changing times and disappointing results and felt the need for a community that could support their activities, possibly with psychological support being most important.

There were, however, many dangers connected with these types of activities. Innovative projects were often discussed on a superficial level. Presentations tended to be "show-and-tell" and "learnings" of successes and failures were often rather doubtful. It became evident that without a thorough understanding of <u>the process of change</u> little learning could take place. Secondly, conferences were "one-shot affairs" and did not create the

network support that was often sought. Thirdly, international meetings had a tendency to recruit "the wrong people" - those people who deserved attention for seniority reasons or other rather irrelevant reasons. How could one create international networks of individuals and institutions who needed support in their educational change activities?

A series of case studies of educational change were supported by CERI. In this activity, several hundred educators from many countries were active in either the development of the case studies or in the discussion of the results. A beginning network of professionals interested in a deeper understanding of how changes come about began to develop. Following the case studies(41) CERI decided to start the experimental IMTEC programme. The project was created to fulfil two purposes, namely: 1) to create international "training opportunities" for individuals involved in educational change and 2) to stimulate national activities through international programmes.

A number of activities have taken place in the IMTEC project over the past four years, including:

- the development of over 150 case studies and management analysis papers on educational change by network members, consultants and central core staff;

- the organization of ten international seminars and conferences with close to 1,000 participants with the purpose of analyzing the critical processes in educational change;

- the development of an extensive research of the literature in the field, synthesized into four issues of an IMTEC change bibliography;

- the creation or stimulation through IMTEC activities of a series of national seminars and networks of innovators. Presently, more than 1,500 individuals involved in educational change are in one way or another linked to IMTEC networks.

There are certain interesting characteristics with IMTEC networks so far:

1) They are multi-level networks. From the very start, central and local decision makers, together with politicians, teachers, students and researchers have joined the various activities.

2) The networks are primarily process networks, although one can seldom separate process from content discussions. The IMTEC change theory model is in itself an illustration of the linkages between content (innovation characteristics) and process.

3) IMTEC networks are widespread geographically across national boundaries.

4) The funding of IMTEC networks today is based on membership fees (minimum $1,000 per year for institutions, up to $5,000 per school district). A small percentage of the funding comes from foundations and voluntary contributions from governments. (In the first years funding came from 17 governments and the Ford Foundation. Voluntary contributions and membership fees have increasingly replaced central funding.)

The IMTEC project came to an end under the auspices of the OECD on 31st December, 1976. A new independent non-profit IMTEC organization has been created to further develop the existing networks and to create new international networks in education(42). Throughout the IMTEC project several basic problems in the development of international networks became increasingly important:

The early conception of IMTEC was that it should be a "training" project. Although it was never clearly defined it was likely that the Governing Board of CERI had a relatively traditional training concept in mind. The general notion was that a knowledge base about the process of change in education existed and that general strategies for change could be developed that could be taught, discussed and implemented in Member countries. CERI is in itself a network of central decision makers with a particular interest in educational reforms. Through IMTEC one could potentially see a useful mechanism to train top-level and middle-level management in "effective" strategies and techniques of managing change.

It soom became clear that both the IMTEC core staff and the network members did see problems in such a training concept. First, the knowledge base did not exist, or, more precisely, there was no agreement on one particular model of educational change. Secondly, the core staff defined the management of change as a function, seen as a shared function among a number of interest groups, including students, parents, decision makers, teachers and researchers. The management of change, therefore, was not defined as a one-way "management-process" but as a complex dialogue.

The emphasis in the project was placed increasingly on "knowledge production". At the same time "training activities" were organized. In reality they were international workshops of experienced innovators, researchers and decision makers who attempted to clarify critical processes in educational change. Those who supported IMTEC as a "training programme" felt increasingly uneasy. It was also clear for staff and associates that the research function in itself was a gigantic task that would need more support than the programme could generate.

A more important issue, however, was the question of control. IMTEC became a very popular programme among innovative project groups in Member countries(*). There is usually an incentive

(*) Western Europe, North America, Japan, Australia, New Zealand.

in being considered for attendance in an international workshop. Being sent to IMTEC workshops was considered increasingly as an important event. The so-called "IMTEC National Reference Groups" created to assist IMTEC in identifying individuals and project groups sometimes became gatekeepers; in other cases the Government wanted to control the selection of personnel. However, the growing network of individuals recommended new people for international seminars, sometimes in contradition to central recommendations. Over the last years, more than 50% of the participants to IMTEC seminars were recruited independent of central authorities, who gave the financial support for the project over the first four years. If Ernest House is correct in saying that "to control the flow of personal contact is to control innovation"(43) then of course it can be said that IMTEC became a threat to central decision makers. Not only did these networks grow independent of central control but they also introduced alternative ideas, critiqued existing reforms through case studies, management analysis papers(44) and other reviews, and introduced rather complex notions about how educational change could be facilitated, often in contrast to the notions of central planning models or R-D & D models. Since the issue of control was crucial it was only a question of time before the Governments represented in the Governing Board of CERI chose to conclude the IMTEC experimental programme.

There were, however, many other problems connected with these networking activities. It was always difficult to keep in touch

in a personal and meaningful way with such a great number of individuals and institutions. The central core group could not continue the support of further activities because the pressure to include new individuals and project groups was strong. Secondly, it was rather obvious that several individuals did not continue as active members, partly due to inadequate follow-up. Many could not easily communicate in English (in writing) and therefore found international network activities too energy-draining. Also, their chances for being involved in face-to-face contacts in the near future were rather dim, simply because so many other candidates from their country would probably be chosen. Distance, therefore, caused serious problems. It increased the demand for resources, increased communication problems (particularly language problems), increased cultural differences and also tended to increase the gap in educational experience.

In other words there are a number of reasons why a network like IMTEC may not succeed. Are their forces which work for such a network?

1) Personal access to new information: We have found that very little knowledge exists about what actually goes on in other educational systems beyond rather superficial information about school structures, and certain aspects of curricula. Despite considerable work in inter-Governmental

agencies there is no well-organized workable information system for decision makers and teachers. It seems obvious that if one could get personal access to a highly selected network of individuals and institutions, the chances of getting new information at a "low energy level" would be high. Even if the programme activities are not excellent, the selection of people and the chances of meeting experienced colleagues is highly valued. Evaluation of IMTEC activities shows clearly that meetings with experienced colleagues have been extremely valuable.

However, for many it does not work quite so easily. Many have difficulties in getting a real grasp of alternative systems. Sometimes they go back with a superficial understanding, sometimes with an unjustifiable positive or negative impression. Some others have too high expectations of what is "out there" and return home with a feeling that there is nothing very new in what is going on in other countries(!) The process of organizing "peer group learning" is therefore very difficult, it needs careful planning and development work and relatively high investments throughout the periods of implementation.

2) Psychological support: Many innovators work under considerable pressure in their home environments. They seldom have the time to take a retreat, reconsider priorities, question

their own assumptions, look for new knowledge and seek personal support. We have found that the latter is sometimes the most crucial. Most decision makers responsible for educational change are uncertain about what they are doing, unclear about the many barriers they are discovering in their work. They need the support of colleagues who are "in the same boat" and who can also give some personal help in dealing with insecurity and pressure. To what extent "retreats" of this kind have a positive effect on the organization as a whole has not been systematically followed up. There is some evidence that "leadership seminars" external to the site has little long-range organizational effect(45).

3) Political support: Most educational decision making is rather local in nature. The political pressure against certain innovations at the local level can potentially be very difficult to live with. Sometimes the only reason for survival has been external or international attention. Donella Dolci's school at Cecilia, for example, would probably not exist today without a strong international support group. Many innovators seek political support through "horizontal linkages". If arguments can be built up that the innovation has considerable international attention, receiving high-level visitors, etc. the chances for survival are better. Clearly, this raises a dilemma. Who has the right to "intervene" in a local political process?

4) New skills: Innovators are mainly concerned about the content of the innovation, and often encounter difficulties due to an inadequate understanding of and skills in dealing with the process of change. Process awareness has been a major part of all IMTEC activities. Knowledge about process skills has been available and contacts with resource persons in these areas have been a central concern. The initial contacts in network meetings have been followed up by many through workshops, training courses and inservice training schemes. In many local school systems - at lease this is true in Europe - process skills in areas like planning, evaluation, organizational development and change analysis are rare among practitioners.

Will skills be used in the home setting? We don't know. In certain cases we have found extensive use of new skills, in others little transfer has taken place. Under what conditions are "network skills" used in the home setting?

5) Network resources: Through a broad international involvement, IMTEC has been able to build up a unique resource network. It has been possible to attract first-class researchers and practitioners for research-tasks, case studies, development work, or seminars. The value of easy access to people and programmes is a major incentive for continuous network development.

The main problem here is the feeling of "foreign" knowledge. The network member is interested in access to information and people. Only in rare cases, however, and particularly in Europe, are persons called upon as resource persons in the home setting. The "consultancy pattern" found in North America does not exist in Europe.

6) Core staff: During four to five years a core staff has been suppored by CERI and member governments and continues to be supported by institutions, local school districts and governments (in some cases). The network would not have been initiated and developed without the support of CERI and a core staff. Direct interaction among network members could have existed without the core staff. The initiation of new programmes, however, has been dependent on the core staff. A number of new approaches and techniques to networking has been developed, including guidelines for case analysis and management analysis papers and a survey-feedback approach to organizational learning called "Guide to Institutional Learning" (GIL). In addition network members contribute to the IMTEC Bibliography, a systematic attempt to disseminate information about innovations in the network among network members.

The core staff has attracted some 20 professionals for full-time work as IMTEC fellows. An IMTEC fellow usually has a

sabbatical programme or is otherwise paid a scholarship by his/her Government, a foundation or an institution. A fellow typically works for approximately one year at the IMTEC centre, travels to network members and continues to be a part of the "IMTEC Associates" following his fellow year. Fellows, as well as other particularly interested members, play an important linkage function in the network, stimulating further programmes, discussions and interaction.

In many ways the IMTEC core group had a unique and easy task. Incentives have been very high for joining the group. However, it has also been difficult because the distance (geographical, organizational, psychological) between network activities and local problems is greater than usual.

Network activities cannot be "planned" in the usual sense. Active network members are crucial for success. An active core group is sometimes counterproductive. What are the management skills necessary for successful networks?

Clearly, there are also many other reasons for joining international networks. It may be an excuse for international travel, it could be an excuse to get away from the daily work. Although there might be a danger in networks where personal incentives are so strong that they divert from the "real"

purposes, one should be careful in downgrading any form of motivation. Networks, in my view, are not goal-oriented in the traditional sense. They tend to serve multiple purposes for individuals and the purposes might well shift over time. Networks are what members make them to be.

DILEMMAS IN NETWORKING

There are no straight-forward answers to a discussion of intervention strategies in social systems. Intervention by, and of itself, is a political activity that has value implications. What one does will always be effective in some sense and counteractive from other points of view. From the theoretical discussion above and also through the three case illustrations I have already touched upon certain issues that I see as central in a discussion of networks. In this section I would like to underline some of these issues and also to add a few factors to the list of dilemmas with which one is faced in analyzing networks.

Verticality-Horizontality

Networks link members in an informal way across formal decision-making lines. Network members will usually come from different parts of the system or across systems and do not often report to the same persons in authority. Effectively used networks then become a power in its own right that might have considerable influence on the process of change.

The dilemma is that most innovations and problem-solving activities need the support of decision makers in authority, people who might feel unnecessarily threatened by network activities. In certain cases we are talking about power conflicts. Can (should) such conflicts be avoided? In many cases it is vital for successful implementation that these conflicts are resolved. To what extent, therefore, should networks purposely be built as multi-level networks?

Networks - For What?

In the NIE staff paper, as well as in other presentations of networks, a number of tasks have been envisaged for networks. It is not clear what networks can do well, nor what other strategies for change might accomplish more easily. In what aspects of the change process can, or should, networks support local problem solving? This, in my view, depends on how one understands the term "problem solving". If it is looked upon mainly as a rational, "neutral" process to identify needs and problems and to find effective answers outside, process consultancy might be the most effective strategy. If "problem solving" is also looked upon as a political process where personal contacts, trust, psychological support and conflicts between interest groups are an important part of the process, informal networks might have an important role.

Status Quo or Educational Change?

I would argue that most networks support the vested interests of people in power. At least over time, networks tend to defend

certain interests. How can networks be built that do not necessarily support one particular interest group or one idea but continuously search for new and better answers to improve practice? How can individuals be reinforced to create organizations of this type and how can the networks be sustained?

Knowledge Utilization

I have already discussed alternative meanings of "knowledge" and the difference between knowledge as a value-free concept and "knowledge in use". Beyond this distinction is the question of transferability of innovations in social systems. Ernest House has discussed what he calls "the myth of transferability"(46). To what extent is it possible to transfer solutions from one context to another? Most experiences and some research indicate that innovations are not adopted but rather adapted from one situation to another. The process is characterized by mutual adaptation and development. It is more likely that certain processes can be transferred althouth it might also be somewhat of an open question. Processes and skills are value loaded and have cultural biases as well.

We have seen, however, that the strongest networks are content oriented and not process oriented. People identify with missions that are concrete. How can a superficial transfer of experiences

from one place to another be avoided? How can one sustain networks that critically examine "knowledge in use"? How can the limitations and possibilities of certain strategies, processes and innovations under different conditions be analyzed?

Roles and Relationships

One of the main dilemmas in networking is to define roles and role relationships. First, what type of central core, if any, is advisable? What roles should such a core perform in relationship to network members? Second, is it possible to envisage a network without any sort of leadership? Most networks I have observed focus around the initiatives of one or several network members who actually function as "decentralized cores". What are the characteristics and conditions for leadership in networks?

The dilemma here is that many networks will depend on a central core for initiation, communication and further development of network programmes. On the other hand, the tendency is that networks become formal organizations and the core group takes on more than a coordinating role. The core group tends to take on stronger and stronger leadership roles which is reinforced by the need for economic support. The need to prove that the network is viable and that the core group is essential becomes crucial. Then it is no longer a spontaneous, informal network but becomes an established group of vested interests.

Incentive Structures

I have already mentioned that the main incentives I see for network members are psychological, political and professional. They provide members with a feeling of belonging and security. They also provide members with relatively easy access to information and give them some strong arguments in the home setting.

The stronger the incentives for the individual, the more the tendency to "close" the network. In real life, resources and power are limited, as well as status and influence. Networks might provide individuals with the necessary support to maintain and improve their own status. In such a situation, the liklihood of including others with different views, persons who might be a challenge, is rather unlikely. The dilemma is therefore to create network conditions that provide individuals with strong incentives and, at the same time, keep the network open for new ideas and individuals to join.

Networks and the Home Base

Can informal networks be a strategy to assist a problem-solving process at the home base? This notion might be too idealistic. Networks are often excuses to get away from the home base, to forget the local problems and to think about something else! The home situation for many is not all that exciting. Many administrators or teachers are tired of day-to-day problems, less

tired, however, of what they look upon as central, professional ideas. Networks provide them with an opportunity to discuss their concerns with individuals of a common background without being threatened or bothered with local constraints.

Why are individuals seeking networks? I would think that the motivation varies considerably. The dilemma is first a dilemma if informal networks only meet a personal agenda and the home setting of the individual is not in any significant way influenced by network membership. How is it possible on the one hand to give individuals personal satisfaction from network membership and, at the same time, give focus to local problem solving?

The Use of Energy

Matthew Miles in his October 25th note says: "I am attracted by the idea that 'good' networks permit low energy access to trusted information"(47) This is certainly a very important aspect of networks. One should not, however, draw the conclusion that only networks that can give their members this service are viable. Some of the most promising networks I have seen are networks where all individuals are supposed to give. What they actually receive are intrinsic rewards resulting from their own work. I have also seen in IMTEC that the most stimulating activities have been those where individuals have invested considerable energy in giving other colleagues access to their experience. Good networks might be networks that give the individual an opportunity to give others access to their own experience.

I would assume that both types of motivation would be important in networks. The dilemma is to build a network which, on the one hand, permits low energy access to trusted information and, on the other, provides individuals with full opportunities to invest energy, and share their experiences with others.

Reinventing the Wheel?

In most discussions of strategies for educational change, one is usually concerned with the relationship between "knowledge production" and "knowledge dissemination". Or, to put it in another way, are networks primarily strategies for the diffusion of innovations or do they also play a role in the development of new practices, including research and development work? Related to this question is the problem of "reinventing the wheel"; the problem that each institution or user is going through a time-consuming and energy-draining process of finding new and better answers to problems others have "solved".

I do not usually find this discussion very useful. First, what are the characteristics of "a problem" in education? If it is technical, and purely technical, one can certainly argue for a production-type R-D & D strategy since technical problems do not differ very much from one location to another. And, there are educational problems that are mainly technical problems but most educational problems are not and what is worse, it is hard to know

what the "problem" is all about. It usually has political, psychological, technical and organizational dimensions. What strategy orientations one would select depends largely on the relative importance of these dimensions.

In certain cases it is definitely necessary to reinvent the wheel. That is, although a solution is "obvious" from an outsider's point of view, members of a school organization need to go through a sometimes painful process of rediscovering a solution. It is necessary both politically and psychologically. In other cases "foreign" solutions are partly acceptable but only after careful local consideration and control. In such cases we are talking about a mutual adaptation and development process. I would suggest that most educational problem solving is of the latter nature.

Time and Priorities

Most network members, when they have finally decided to be active in a network, find it interesting, stimulating and rewarding. The pressure of local forces or the demands of daily life, however, are so great on most individuals that even if they find it useful they do not find it vital.

The dilemma here is that it is necessary for members to get really involved - that is, to use time and energy - in a network to be rewarded. Teachers in particular and most practitioners

are heavily scheduled from day to day and there is little room for alternative use of time. There is, indeed, little time for problem solving and long-range planning. This is a serious threat to most networks in education. It is unlikely that network activities can be more than useful activities that come over and above other commitments. Many participants will find network activities of value but they will compete with other time-consuming activities. Sometimes there is not even the freedom or legal possibilities of getting involved if somehow it competes with the daily schedule.

Geography

To what extent is distance a problem? Quite clearly, if face-to-face contacts are a matter of concern then geography becomes an important limiting factor in networks. It is very difficult to find the money for networks, simply because they do not belong to any particular authority, they cut across traditional lines of funding and are not accountable to any one authority.

How important are face-to-face contacts? It might depend on the type of networks and network members involved. Networks of researchers, for example, usually rely on written communication. Researchers, I believe, have considerable time for reading and also are used to written information as the main source of information. Networks of practitioners, I would think, need a different orientation. Initial face-to-face contacts seem to me

to be crucial. The creation of "network norms" and motivation for future cooperation and personal commitments to goals and programmes can best be done, in my view, through personal face-to-face contacts. I am more doubtful whether this type of communication is necessary over time. However, if one wants to draw new members to the network it might be necessary occasionally to invite network members to seminars, workshops, field studies and other activities when the network can be "regenerated" again through face-to-face contacts.

NETWORKS AS A STRATEGY FOR EDUCATIONAL CHANGE

Existing strategies for educational change all have limitations. It seems to me that they differ widely in terms of their effects from system to system, from setting to setting and from one type of innovation to another. A basic assumption of this paper has been that strategies for educational change need to be considered in relationship to certain basic factors, the school system and the school as an organization, the environment and characteristics of the innovation itself. No one particular change strategy will alone be sufficient in the mamoth task of improving educational practice.

Most strategy orientations are consensus oriented or can be understood as neo-evolutionary strategies for educational change. They have not in any explicit form built in a conflict perspective of change. We have seen that many educational change efforts have

components of social change, organizational change, behavioural change and technological change. Such complex changes can rarely be introduced without conflicts in the organizations and in the larger environment.

At this stage I will go back to the definitions introduced in the first section of this paper where I made a distinction between the following dimensions in educational change:

(a) technological change;
(b) behavioural change;
(c) organizational change; and
(d) social change.

Networks can play different functions. We also know that individuals seek networks for widely different reasons. What functions are in general most important in what type of change effort? I will discuss the following functions in relation to the four dimensions of innovations mentioned above:

(a) a political function;
(b) a psychological function;
(c) a skill-development function;
(d) an information function; and
(e) a resource function (support of human and capital resources).

Furthermore, I will analyze to what extent change efforts with mainly one of the above dimensions represented need networks that are:

(a) single or multiple-purpose oriented;

(b) content or process oriented; and

(c) single or multiple-level oriented.

The discussion below is mainly meant as an illustration of the theme "networks as strategies for educational change". I have no empirical evidence for the rather broad generalizations put forward. Its main value might be to start a systematic discussion of the use of networks for educational change and focus research on some issues that would clarify the purpose and the types of networks under given conditions. Only in a case situation where the various dimensions can be analyzed is it possible to arrive at more precise conclusions useful for practice.

The analysis is presented in figure 3 and figure 4 below:

Purpose of Networks / Type of Innovations	Political	Psychological	Information	Skills	Resources
Technological	low	low	high	medium	medium
Behavioural	low	high	medium	medium	low
Organizational	medium	high	low	high	low
Social	high	medium	medium	low	low

Figure 3: Relationships Between Types of Innovations and Purpose of Networks

Characteristics of networks / Types of innovation	Single/ multiple purpose	Content/ process	Single/ multiple level
Technological	Single	Content	multiple-level
Behavioural	Multiple	Process	Single-level
Organizational	Multiple	Process/ content	Multiple-level
Social	Multiple	Content (policy-orientation)	Multiple-level

Figure 4: Relationships Between Types of Innovations and Characteristics of Networks

Technological Change: These are changes concerned with means, methods and procedures. The more the innovation is mainly a change in technology and does not imply local adaptations or behaviour and organizational change the more likely an R-D & D approach will be useful. Networks will probably mainly fulfil an information function; secondly, the acquisition of new skills

and possibly the attainment of new resources (human and capital). Of less importance are probably the political and psycholigical functions, except for major technological change efforts that will usually include all dimensions of change from behavioural to organizational change.

Technological innovations probably attract content oriented and often single purpose oriented networks. The focus is usually on one single innovation and not with a broader range of purposes. Networks might well be multiple level, including both users and R & D personnel.

Behavioural Change: These are changes that demand much of the individual actor. Problem solving approaches seem most central as a change strategy. Networks mainly serve as a psychological support in a peer community. Also, the information and skills function are important with less emphasis in most cases on the political function and the resource function (although process consultancy in some cases might be effective).

Most networks concerned with behavioural change would be multiple purpose oriented. They would be concerned with the global problem of behavioural change (e.g. "the role of the teacher in a changing society"). These networks are mainly process oriented with some aspects on content, and they usually function as single level

networks, that is they are basically peer groups, sometimes with inputs from social scientists (e.g. organizational development, sensitivity training, etc.)

Organizational Change: These innovations are complex, demand a great amount of change from the individuals, involve many individuals and groups, group norms, structures and leadership norms, and have a high degree of visibility. Such complex changes would usually include political and economic support, demand local and organizational development capacity and new knowledge and skills throughout the system. The more complex the innovation the more functions the networks are likely to play. Networks may play quite different functions from setting to setting but I would assume that both the psychological function and the skill development function may be important in many cases. The political function may also be strengthened through networks. Organizational changes are usually considered risk-taking events and the use of network members and network cases as "proofs" for the liklihood of success might be important.

Most networks concerned with organizational change would be multiple-purpose oriented or, to put it in another way, the purpose will be rather complex. The main orientation will be process although content will also be important. In most cases successful networks of orgnaizational change are multiple-level including practitioners at different levels and consultants at various stages of the process.

Social Change: These changes imply the redistribution of power, resources and opportunities within a society. Political strategies would play a dominant role. The main function of social change networks would probably be political and partly psychological. Information about alternative policies from other settings would be important. In the early stages of social change efforts, networks would seldom be used to obtain resources or for the development of new skills. (These functions will become more important during periods of institutional implementation.)

Most networks for social change are multiple-purpose oriented. They tend to be content oriented, concerned with alternative policy orientations and their broad political effects. They are usually multiple-level with, however, a tendency to attract top-level policy-oriented individuals.

Research or Dissemination

Are networks mainly dissemination mechanisms, or do they also play an important research and development function? In my view this seems to depend on the type of change effort they support and also the relative weight of the various functions described above.

In technological change networks probably mainly play a dissemination function. The products are developed elsewhere. However, in these types of changes a local adaptation and development process

usually takes place. This process might be the start of new developments and may raise questions for further research.

In behavioural change the dissemination function seems less important although information about experiences from other settings and the acquisition of new skills may be important. More important, however, is the implementation process at the local site. A problem-solving orientation seems necessary for effective change. The "development function" becomes a local function that might well be supported by network experiences. Again this might generate questions for further research.

Networks for organizational change might also play an important research and development function. Knowledge of organizations are in my view most useful in a phenomenological perspective; one needs to include the many factors that characterize the organizational setting. A problem-solving approach would seem to be a promising strategy for organizational renewal. Networks could play an important R & D role in two ways:

(a) By assisting network members in their local situation (consultancy, information) in designing reliable R & D programmes (including evaluation programmes).

(b) By designing programmes that could be implemented in several local settings to obtain comparable data across sites.

Networks for social change usually have a policy orientation. In some cases networks are used as a platform or "showroom" for local policies. International fora are quite often used mainly for this purpose. There are also examples, however, of policy research initiated and developed through these networks. The network information base could provide researchers with comparable data.

Consensus or Conflicts?

Is "networking" a strategy which builds on a neo-evolutionary or a conflict theory of change? In my view it can be seen as a strategy within any one theoretical tradition.

Educational networks aiming at the liberation of poor peasants in Brazil may assume a conflict position in relation to the established educational hierarchy (i.e. cultural revivalization). Networks of alternative schools in many European countries are also seen as "counter cultures" to existing schools.

On the other hand, a network of superintendents is usually (but not always) created to assist in the management and modernization of the existing system. It is neo-evolutionary in nature.

In between these extremes are a number of networks where the political consequences are unclear. It seems to me that the following dimensions might "explain" the political nature of a network:

1) Position of members: The more members are associated with administrative or other high-level roles, the more likely the network has a neo-evolutionary orientation. On the other hand, the more members are associated with "grassroot" groups (external to or within the system) the more likely a network will be conflict oriented.

2) Types of change: Most educational changes are complex and include various dimensions of the types described above. I would argue that the more a network is concerned with social change the more it becomes a conflict strategy, and the more technological change is the goal the more a neo-evolutionary orientation will be used. Both behavioural and organizational change will usually have aspects of both.

3) Sources of funding: The more a network is independent in terms of funding the more it will be able to determine its own role. Funding from sources within the system tends to control networks towards a neo-evolutionary position. Outside funding may give conflict networks a chance to survive. Also, neo-evolutionary networks might, however, be funded from external sources.

THE MANAGEMENT OF NETWORKS

This heading to many is a non-starter! What is considered ideal is the spontaneous informal or non-formal networks. How can

spontaneous activities be "managed"? Many see a management function as a threat to the unique characteristics of spontaneous networks.

There are good reasons to believe that "management" in the traditional way of using the term will be contradictory to network building. Management is usually concerned with the allocation of resources, planning, development and evaluation of activities, personnel policies and the administering and control of regulations and procedures. None of these functions seem to be in line with network thinking. In fact, the development of a strong managerial core would most likely change a network rather quickly into a formal organization that will take away some of the strength of the spontaneous network. In spite of these concerns, however, there seems to me to be certain functions to be taken care of by a core group:

1. Initiation: There may be examples of spontaneously developed networks without a core group. However, these seem to be exceptions to the rule. Quite often one will see one single individual or a group of individuals taking an initiative and establishing some form of a network centre for communication purposes at least.

2. Financing: The financing of networks soon becomes an important concern for network members and for the core staff.

Networks are not inexpensive. They depend quite often on the extent of face-to-face contacts and the size of the core group. Some expenses may be borne by network members as individuals or through their institutions. Again, this depends on the acceptance of the network at the local site. If network membership is accepted, considerable resources can potentially be drawn from members and member institutions including travel funds, commitments in kind, research and development work, hospitality for meetings, visits, etc.

The problem of financing will increase from reform networks and innovation networks to cultural revitalization networks and deschooling networks. In the two latter instances, network support is unlikely to come from "official" sources and will depend on either individual member support or private funds. In more authoritarian cultures where even minor adjustments to existing practice are looked upon as radical alternatives, what we have defined as innovation networks will also have financing difficulties. In these cultures mainly reform networks usually composed of top-level decision makers have access to network funding.

The funding problems will also increase with the level of network membership. At the central decision-making level, funding is not usually a problem and time allocation to network activities is also less difficult. The more users

are involved at the school level (e.g. teachers) the more funding will be a problem. The number of network members is usually greater and time allocation to network activities is becoming more constrained by more rigid time allocation procedures.

Many networks, therefore, cease to exist due to funding problems. Low-level communication among a few individuals tends to continue even if the network dies. I see the existence of a core group as one guarantee for continuous funding of network activities.

3. Facilitating Network Activities: It is possible to facilitate communication at all levels in networks through rather simple approaches and techniques. In this context I will mention a few techniques used in the IMTEC project:

Peer-learning techniques: Attempts to build network norms around member-initiated activities in seminars. Use of resource persons as colleagues and not experts. Concern for the social organization in addition to the cognitive aspects and use of feedback techniques to ensure individual and group learning.

Process orientation: In most networks there is a tendency towards superficial exchanges of "experiences" without a

deeper understanding of the context and the conditions under which the experiences have value. The core group can facilitate a process orientation through discussions that will enable participants to maximize the transfer of experiences. Case studies based on a common format are useful for a process orientation, as well as self-studies of educational innovations (IMTEC has developed the so-called Management Analysis Paper). Field studies based on a "case study approach" can also facilitate a process discussion.

Implementation studies: It is important to link network experiences to the home setting. IMTEC has developed schemes for the redesign of local projects and also experimental programmes that assist members in studying the school as an organization. These approaches are particularly useful for process-oriented networks concerned with local problem solving.

Personalized information systems: Many practitioners who are members of networks have limited time for reading in general and will seldom find time to digest research reports or evaluation reports from innovative projects. It is possible, however, to design an information system where network members themselves contribute to the system by sending short summaries of their own projects designed for peers in the network. Most of the information will not be .

available in published form, the reports are not polished; they serve as "awareness" reports for colleagues. IMTEC has developed an annotated bibliography that to some extent is a personalized information system. As earlier indicated evaluation of the IMTEC bibliography has indicated a major interest in this system by practitioners and in particular by those who themselves contribute to the system.

Evaluation function: What is a successful network? It is hard to define without describing the purpose of the network and its characteristics in some more detail. The evaluation function is certainly a responsibility for all network members. However, this is not always the case. I would suggest that one of the main reasons that networks tend to disappear is the fact that they have not built in a continuous feedback system that enables members to assess the quality of future activities.

FOOTNOTES

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(2) Dalin, 1973, Op.cit, p.34.

(3) I am endebted to Walo Hutmacher, Director of Planning, Research and Development, Geneva, Switzerland for these observations. He comments further in Dalin, Per: Limits to Change? Towards a Theory of Educational Change (in draft, to be published in 1977).

(4) Heidenheimer, Arnold J.: "The Politics of Educational Reform: Explaining Different Outcomes of School Comprehensivization Attempts in Sweden and West Germany", Comparative Education Review, October 1974, pp.388-410.

(5) Dalin, 1973, Op.cit, p.34.

(6) Travers, Robert M.W.: "Educational Technology and Politics" in Travers, Robert M.W., Second Hand Book of Research on Teaching.

(7) Travers, Op.cit, p.985.

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(9) The IMTEC project, a programme sponsored by the OECD, has developed approximately 150 case studies and "Management Analysis Papers" (MAPs) studying the process of change and its management.

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(37) See footnote (15).

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(39) I am endebted to Professor Einar Thorsrud, The Work Research Institutes, Oslo, for this observation.

(40) Reports on IMTEC can be obtained from: IMTEC, Post Box 79, Blindern, Oslo 3, Norway (Tel: 02-46 39 35).

(41) Case Studies of Educational Innovation:

Vol. I: At the Central Level
Vol. II: At the Regional Level
Vol.III: At the School Level
Vol. IV: Dalin, Per: Strategies for Educational Innovation

(42) The new IMTEC networks are "International Network of Teacher Training Institutions", "International Network of Urban School Systems" and further networks are under development in elementary education and secondary education. Bilateral programmes are being developed with several institutions and governments in the western world and the developing countries.

(43) House, Ernest: Op.cit, p.6.

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